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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,932	02/09/2006	Yutaka Murakami	L9289.05197	3690

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Dickinson Wright PLLC  
James E. Ledbetter, Esq.  
International Square  
1875 Eye Street, N.W., Suite 1200  
Washington, DC 20006

EXAMINER
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NGUYEN, LEON VIET Q

ART UNIT	PAPER NUMBER
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2611

MAIL DATE	DELIVERY MODE
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08/04/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/562,932	<b>Applicant(s)</b> MURAKAMI ET AL.	
	<b>Examiner</b> LEON-VIET Q. NGUYEN	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 26-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 26-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/8/09</u> .  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. This office action is in response to communication filed on 6/3/09. Claims 1-25 have been cancelled. Claims 26-44 have been added. Claims 26-44 are pending on this application.

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 26-44 have been considered but are moot in view of the new ground(s) of rejection.

### ***Information Disclosure Statement***

3. The information disclosure statement (IDS) submitted on 6/8/09 was filed after the mailing date of 6/8/09. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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**2. Claims 26, 28, 29, 31, 34-40, and 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bjerke et al (US20070064831) in view of Medlock et al (US7233810).**

Re claim 26, Bjerke teaches a transmitting apparatus comprising:

a first modulation section (elements 222a, 224a, and 226a in fig. 2A) that obtains a first modulated signal by modulating a first transmission data sequence signal (the output of element 226a in fig. 2A);

a second modulation section (elements 222t, 224t, and 226t in fig. 2A) that obtains a second modulated signal by mapping a second transmission data sequence (symbol mapping 222t in fig. 2A) at a signal point position of a predetermined modulation scheme (§§0029, §§0039); and

a plurality of antennas that transmit the first and second modulated signals (antennas 124a-124t in fig. 2A),

wherein the first modulation section:

(i) includes a first mapping mode of mapping the first transmission data sequence (symbol mapping 222a in fig. 2A) to a signal point position using a same mapping rule as a mapping rule used in the second modulation section (§§0029, §§0038, it would be obvious to use the same mapping rule for both modulation sections using the same modulation scheme such as M-PSK);

(ii) maps identical data of the first transmission data sequence using the first and second mapping modes (§§0065, it is well known in the art that replicas of the same

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signal are transmitted using spatial diversity. Therefore each antenna 124a-124t would transmit the same data signal); and

(iii) obtains the first modulated signal (the output of element 226a in fig. 2A) by selectively outputting a modulated signal of the identical data obtained by using the first and second mapping modes (¶0029, although not explicitly taught, one modulation scheme for each transmit antenna is interpreted to be selective), in a time direction or in a frequency direction (IFFT 224a in fig. 2A, it is well known that an IFFT is used to convert frequency domain signals to time domain signals).

Bjerke fails to teach a second mapping mode of mapping the first transmission data sequence to a signal point position rotated by a predetermined amount of a phase rotation from a signal point of the mapping rule used in the second modulation section.

However Medlock teaches a second mapping mode (col. 19 lines 6-8, 8-PSK used in a second UTU such as UTU B in fig. 2A) of mapping the first transmission data sequence (col. 18 lines 45-46, it is well known in the art that replicas of the same signal are transmitted using spatial diversity) to a signal point position rotated by a predetermined amount of a phase rotation from a signal point of the mapping rule used in the second modulation section (col. 19 lines 6-8).

Therefore taking the combined teachings of Bjerke with Medlock as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the feature of Medlock into the apparatus of Bjerke. The motivation

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to combine Medlock and Bjerke would be to overcome the limitations of pushing data through a communication device to a transmitter (col. 3 lines 50-52 of Medlock).

Re claim 28, the claimed limitations recited have been analyzed and rejected with respect to claim 26.

Re claim 29, the modified invention of Bjerke teaches a transmitting apparatus wherein the first modulation section:

(iv) maps first data of the first transmission data sequence in the first and second mapping modes (§0029 of Bjerke);

(v) at a first point in time, transmits at a same time (§0025 of Bjerke. Although not explicitly taught, simultaneous transmission of data is a well known feature of MIMO technology) the first data mapped by the first modulation section using the first mapping mode (elements 222a-226a in fig. 2A of Bjerke) and second data of the second transmission data sequence mapped by the second modulation section using the predetermined modulation scheme (elements 222t-226t in fig. 2A of Bjerke); and

(vi) at a second point in time (it would be obvious to transmit signals at a later time after the transmission of first signals), transmits at the same time the (§0025 of Bjerke. Although not explicitly taught, simultaneous transmission of data is a well known feature of MIMO technology) first data mapped by the first modulation section

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using the second mapping mode and third data of the second transmission data sequence mapped by the second modulation section using the predetermined modulation scheme (¶0029 of Bjerke).

Re claim 31, the modified invention of Bjerke teaches the transmitting apparatus wherein;

the first mapping mode comprises a QPSK mode (col. 19 lines 6-8 of Medlock);  
and

the second mapping mode comprises a mode of mapping data to a signal point position applied a 45 degree phase rotation from a signal point arrangement of the QPSK mode (col. 19 lines 6-8 of Medlock).

Re claim 34, the claimed limitations recited have been analyzed and rejected with respect to claim 26.

Re claim 35, the claimed limitations recited have been analyzed and rejected with respect to claim 29.

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Re claim 36, the claimed limitations recited have been analyzed and rejected with respect to claim 30.

Re claim 37, the claimed limitations recited have been analyzed and rejected with respect to claim 26.

Re claim 38, the claimed limitations recited have been analyzed and rejected with respect to claim 29.

Re claim 39, the claimed limitations recited have been analyzed and rejected with respect to claim 30.

Re claim 40, the claimed limitations recited have been analyzed and rejected with respect to claim 31.

Re claim 42, the claimed limitations recited have been analyzed and rejected with respect to claim 26. Furthermore, Bjerke teaches that an OFDM system partitions



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the system bandwidth (§0025 of Bjerke). It would be obvious to use the same bandwidth for the first and second transmission signals.

Re claim 43, the modified invention of Bjerke teaches a transmitting apparatus further comprising an orthogonal frequency division multiplexing section that performs orthogonal frequency division multiplexing of the first transmission signal and the second transmission signal (§0029 of Bjerke).

Re claim 44, the claimed limitations recited have been analyzed and rejected with respect to claim 26.

**3. Claims 27, 32, 33, 41, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bjerke et al (US20070064831) and Medlock et al (US7233810) in view of Onggosanusi et al (US20020196842).**

Re claim 27, the modified invention of Bjerke teaches a transmitting apparatus further comprising:

a receiving section (RCVR in elements 124a and 124t in fig. 1 of Bjerke) that receives feedback information indicating a reception state of the first and/or the second modulated signal from a transmitting party (§0043 of Bjerke. The channel conditions sent back to the transmitter system).

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Bjerke fails to teach wherein the first modulation section changes the amount of phase rotation in the second mapping mode based on the feedback information.

However Onggosanusi teaches changes the amount of phase rotation in a mapping mode based on the feedback information (§0067, the rotation change may be accomplished by receiver feeding back bits to the transmitter).

Therefore taking the modified teachings of Bjerke and Medlock with Onggosanusi as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the feature of Onggosanusi into the apparatus of Bjerke and Medlock. The motivation to combine Onggosanusi, Medlock and Bjerke would be to remove interference between respective data streams (§0042 of Onggosanusi).

Re claim 32, the modified invention of Bjerke fails to teach a transmitting wherein the amount of phase rotation in the second mapping mode is changed in accordance with a number of times of transmission of identical data. However Onggosanusi does teach changing the amount of phase rotation in a mapping mode based on the feedback information (§0067, the rotation change may be accomplished by receiver feeding back bits to the transmitter). It would be obvious to rotate the phase of the signal for each transmission.

Therefore taking the modified teachings of Bjerke and Medlock with Onggosanusi as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the feature of Onggosanusi into the apparatus of

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Bjerke and Medlock. The motivation to combine Onggosanusi, Medlock and Bjerke would be to remove interference between respective data streams (§ 1004.2 of Onggosanusi).

Re claim 33, the claimed limitations recited have been analyzed and rejected with respect to claim 27.

Re claim 41, the claimed limitations recited have been analyzed and rejected with respect to claim 32.

Re claim 44, the claimed limitations recited have been analyzed and rejected with respect to claim 27.

### ***Conclusion***

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEON-VIET Q. NGUYEN whose telephone number is (571)270-1185. The examiner can normally be reached on Monday-Friday, alternate Friday off, 7:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon-Viet Q Nguyen/

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Examiner, Art Unit 2611

/Chieh M Fan/

Supervisory Patent Examiner, Art Unit 2611